

REMARKS

The indication of allowable subject matter in claims 16-30 is acknowledged and appreciated. In view of the following remarks, it is respectfully submitted that all claims are in condition for allowance.

Claims 1-15 stand rejected under 35 U.S.C. § 103 as being unpatentable over Applicants' admitted prior art ("AAPA") in view of Kanegae et al. '654 ("Kanegae"). Claims 1-11 have been canceled without prejudice/disclaimer to the subject matter embodied thereby, rendering the rejection thereto moot. Claim 12 is independent. This rejection is respectfully traversed for the following reasons.

Claim 12 recites in pertinent part, "wherein a diameter of the opening increases gradually *from the bottom portion toward the top portion.*" The Examiner admits that AAPA does not disclose the "opening" and therefore relies on Kanegae. However, even assuming *arguendo* proper, the proposed combination does not disclose or suggest the claimed invention. Specifically, the diameter of the alleged opening of Kanegae where it exposes the alleged conductive film is constant. Though the contact hole 16 of Kanegae has an opening whose diameter around the *upper end* changes, nonetheless, the wall surface in the *lower portion* of the hole where it exposes the alleged conductive film stands straight relative to the substrate (*see* Figures 23a to 23d). Accordingly, Kanegae does not suggest the diameter of the opening, referenced in claim 12, increases gradually from the bottom portion toward the top portion.

The Examiner is directed to MPEP § 2143.03 under the section entitled "All Claim Limitations Must Be Taught or Suggested", which sets forth the applicable standard for establishing obviousness under § 103:

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (citing *In re Royka*, 180 USPQ 580 (CCPA 1974)).

In the instant case, the pending rejection does not "establish *prima facie* obviousness of [the] claimed invention" as recited in claim 12 because the proposed combination fails the "all the claim limitations" standard required under § 103.

Indeed, because the wall surface in the lower portion of the Kanegae hole stands straight relative to the substrate, corner portions forming right angles between the bottom and inner surface are formed at the bottom part of the contact hole. As a result, film deposited in the contact hole has poor coverage whereby breaks can occur as well as non-uniformity of the film thickness. According to one aspect of the present invention, however, wherein a diameter of the opening increases gradually from the bottom portion toward the top portion, it can be made possible that no corner portion having a right angle would be formed at the bottom part of the contact hole. The present invention as recited in claim 12 can therefore be capable of providing a film having superior coverage and a uniform thickness on the inner wall of the opening. Kanegae does not recognize nor consider such issues as film coverage and thickness uniformity, and therefore provides no motivation for creating a hole as configured in claim 12.

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claim 12 is patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon are also patentable. In addition, it is respectfully submitted that the dependent claims are patentable based on their own merits by adding novel and non-obvious features to the combination.

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Based on the foregoing, it is respectfully submitted that all pending claims are patentable over the cited prior art. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. § 103 be withdrawn.

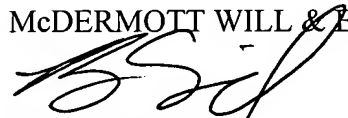
CONCLUSION

Having fully and completely responded to the Office Action, Applicants submit that all of the claims are now in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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